

## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-5 (cancelled).

Claim 6 (new). An apparatus for validating a wiring diagram, creating a wire list, and generating a new wiring diagram for a wiring harness comprising:

- a. a computer having a controller card connected to the computer bus,
- b. a display unit having a multiplexer card,
- c. at least one multiple wire connector module electronically connected to said multiplexer card,
- d. said controller card controlling said multiplexer card,
- e. a software system installed on said computer,
- f. said software system being capable of directing a sequential testing of said wiring harness and storing the results thereof,
- g. said software system being capable of generating written reports in the form of wire lists and tables of wiring harness characteristics, and
- h. said software system being capable of generating new wiring diagrams based upon the results of said testing.

Claim 7 (new). The invention of Claim 6, wherein said connector module has at least one wire.

Claim 8 (new). The invention of Claim 7, wherein said apparatus has a first connector module and a second connector module, and said first connector module and said second connector module are electronically combined into a single connector module.

Claim 9 (new). The invention of Claim 6, wherein said software system is capable of interfacing with computer aided drawing software to generate said new wiring diagrams.

Claim 10 (new). The invention of Claim 7, wherein said software system is capable of interfacing with computer aided drawing software to generate said new wiring diagrams.

Claim 11 (new). The invention of Claim 8, wherein said software system is capable of interfacing with computer aided drawing software to generate said new wiring diagrams.

Claim 12 (new). A process for creating a wire list and a new wiring diagram for a wiring harness comprising the steps of:

- a. a controller in a computer sending a command to a multiplexer card to select two wires,
- b. said multiplexer card sending a voltage at low current through the two wires,
- c. said multiplexer card measuring the value of the voltage level between the two wires and sending said value to said computer,
- d. said computer comparing said value of the voltage level to a set reference and determining the status of the selected wires as being open or short,
- e. said computer storing the status of the selected two wires and said controller proceeding with the next set of wires as in Step a.,
- f. once all sets of wires are tested as in Steps a.-e., a software system installed on said computer generating a wire list of all wires found to be connected to each other, and
- g. said software system generating a new wiring diagram based upon the stored results from all sets of wires.

Claim 13 (new). The invention as in Claim 12, wherein the process further comprises the step of said software system interfacing with computer aided drawing software to generate said new wiring diagram.

Claim 14 (new). A process for validating a wiring diagram manual contained in a software database and creating a new wiring diagram for a wiring harness comprising the steps of:

- a. copying an original wiring diagram manual database to a temporary file,
- b. sorting said temporary file by connector name with the highest pin count pins within the connectors sorted in ascending order,
- c. assigning original pin indentifications within the connector to system pin indentifications,
- d. assigning modules to said connectors,
- e. if any of said connectors has more than 32 pins, combining said modules for those connectors,
- f. creating an interface diagram of original pin indentifications with their assigned system pin indentifications,
- g. creating a test learn file format record and saving said record to a random access file,
- h. running a test,
- i. creating an actual wire list database in a compatible format as said original wiring diagram manual database, said actual wire list database containing the wire list resulting from said test,

- j. comparing said actual wire list database to said original wiring diagram manual database,
- k. if differences between said original wiring diagram manual database and said actual wire list database are identified, displaying the differences between said original wiring diagram database and said actual wire list database, and
- l. generating a new wiring diagram from said actual wire list database based upon the results of said test.

Claim 15 (new). The invention as in Claim 14, wherein the process further comprises the step of interfacing with computer aided drawing software to generate said new wiring diagram.

Claim 16 (new). A process for determining the integrity of wiring insulation and creating a new wiring diagram for a wiring harness comprising the steps of:

- a. applying a low voltage source of approximately 10VDC to all wires in a wiring harness to determine low voltage leakage,
- b. measuring leakage current between wires and between each wire to aircraft structure and providing results in magnitude of gigaOhms,
- c. analyzing results to identify wires failing due to low voltage leakage,
- d. applying a higher voltage source of approximately 500VDC to all wires not identified as failing due to low voltage leakage,
- e. measuring leakage current between wires and between each wire to aircraft structure and providing results in magnitude of gigaOhms,
- f. analyzing results to identify wires failing due to high voltage leakage,

- g. capturing and storing all the interconnections of wires connected to said wiring harness, and
- h. translating captured data to generate a new wiring diagram.

Claim 17 (new). The invention as in Claim 16, wherein the process further comprises the step of interfacing with computer aided drawing software to generate said new wiring diagram.